

## BOOK NOTICES AND REVIEWS.

*Quantitative Pharmaceutical Chemistry.* By GLENN L. JENKINS, PH.D., Professor of Pharmaceutical Chemistry, School of Pharmacy, University of Maryland; and ANDREW G. DUMÉZ, PH.D., Professor of Pharmacy and Dean of the School of Pharmacy, University of Maryland. First Edition. McGraw-Hill Book Company, Inc., New York. 1931. xxiii + 408 pages, 69 figs., 13.5 x 20.3 cm. Price \$3.50.

The object of the book, as stated by the authors, is not only to provide students of pharmacy with a systematic course covering all of the quantitative chemical and physical methods official in the U. S. Pharmacopœia and National Formulary, but also to present some of the generally applicable, non-official methods of analysis which are widely used in pharmacy and with which all students pursuing the profession should be familiar.

The book is divided into four parts. Part I, intended for students who have completed one full year of general inorganic chemistry and qualitative analysis, includes those topics usually treated in elementary textbooks of quantitative analysis. Part II deals with the determination of physical constants and includes determination of solubility, specific gravity, melting and boiling point, refractive index, optical activity and viscosity. Part III includes special chemical methods, such as the determination of ash and moisture; extractive content; chemical constants of oils, fats, waxes, balsams and resins; and special assays of volatile oils, alkaloids and enzyme-containing substances. Parts II and III are to be given after the student has completed organic chemistry. Part IV includes the determination of hydrogen-ion concentration by both potentiometric and colorimetric methods; other exercises in colorimetry and nephelometry; and the ultimate analysis of organic compounds. Part IV is recommended for advanced students and is given by the authors as part of a course in food and drug analysis during the fourth year.

Directions for the various procedures and assays are taken, for the most part, directly from the U. S. Pharmacopœia and National Formulary, thus correlating even the student's elementary training in quantitative analysis with his pharmacy. In view of the rather

limited amount of time devoted to quantitative analysis in many colleges of pharmacy, this seems wise. Since these directions are of necessity brief and condensed, the authors have wisely added ample explanatory material in order that the student may acquire adequate mastery of quantitative technic. The large number of exercises and assays included provides for a considerable degree of elasticity in the time devoted to quantitative methods and permits the instructor to vary the exercises with different classes, should he desire to do so.

In view of the fact that the book is expressly designed to be used by the student over a period of two to three years, it would seem desirable that more attention be given in Part I to certain of what might be called, the essentials of "pure" quantitative analysis. For example, little is said of the precision to be obtained by accepted methods. The student is told, in a brief paragraph, that his results must check, but nowhere is he told how he may know when they check. No mention is made of the meaning of significant figures and the authors themselves err frequently in this respect, normality factors being carried out to four places of decimals even though the titrations are performed with one-normal solutions and burette readings recorded only to tenths of a cubic centimeter. It should be noted that practically all the assays in the sections on acidimetry and alkalimetry are performed with one-normal solutions, the wisdom of which is perhaps open to question. The use of diphenylamine as an inside indicator in dichromate- $\text{Fe}^{++}$  titrations is not mentioned.

On the whole, however, the authors have assembled a tremendous amount of material into compact, well-organized and teachable form. The questions and problems which follow most of the assays are adequate in number and well selected. Especially useful to both instructor and student are the tables, 46 in number, at the end of the respective sections devoted to each quantitative method, listing all the official substances assayed by that method in both the U. S. P. and N. F., size of sample required, appropriate titer and official requirement.

The text fills a long felt need and will no doubt be welcomed by teachers who offer courses of this nature.—A. P. B.